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Some North American Botanists.

VII. STEPHEN ELLIOTT.

As one of the pioneers in American botany, Stephen Elliott holds a distinguished place. His labors and investigations in this department of Natural Science are so well known that every reader of the GAZETTE is familiar with his name. Those who knew him thus as a southern botanist, and hence honor his memory, are naturally desirous of learning more of him; of the position he held among his cotemporaries; of his attainments in other walks of life, and of all these traits of character and of intellectual activity of which, finding as they do, abundant proofs in that department of science with which they are familiar, they expect also to find in other phases of his life. It is to gratify this laudable desire that this sketch is undertaken.

Mr. Elliott died in 1830, at the early age of fifty-eight. All his cotemporaries are gone from whom personal reminiscences might have been obtained, but I am indebted to his grandson, Dr. John B. Elliott, now Professor in New Orleans Medical College and in the University at Sewanee, Tennessee, and also to a eulogy by Dr. James Moultrie, in November, 1830, before the Faculty of the Charleston Medical College, and to the "Philosophical Society" for much information of his early life.

Stephen Elliott came of good stock, and mental activity was an inheritance which he cultivated and transmitted to his descendants. The late Bishop Elliott, of Georgia, his son, was for a time, as his father before him had been, President of the South Carolina College, and ended his life well beloved and universally lamented, in the higher plane of the Christian ministry. Of his later descendants of another generation, yet living and doing honor to his name, it is not becoming to speak.

He was born at Beaufort, South Carolina, November 11th, 1771, the third son of William Elliott, who intermarried in 1760

with Mary Barnwell. His father died while he was yet young, and the care of his education devolved on his elder brother, William. The rudiments of his education he received in his native town. From there he was sent to New Haven, in 1787, and placed for a while under the tuition of Mr. (afterwards Judge) S. S. Baldwin. In February following he entered Yale College. There are letters, given in full in Dr. Moultrie's eulogy, written to his friends here after his death, from Judge Baldwin, of New Haven, and Prof. Hezekiah Howe, of Yale, in which they both speak in the highest terms of his college life. Judge Baldwin, with whom he carried on his preparatory classical studies for admission, says: "I soon found him a young gentleman of prepossessing manners, of steady habits, of great industry, of close application to the object of pursuit, and possessed of a sound, discriminating mind, with an early, fixed and full determination to become thoroughly master of all he attempted to learn. I had the pleasure of an intimate personal acquaintance with him during his connection with the college, and without making invidious comparisons, I can safely say that he ranked high in the estimation of the Faculty, of his classmates, and of all who knew him. His deportment was dignified and exemplarily correct. He not only attended with diligent perseverance to his classical studies, in which he was highly distinguished, but he also acquired much more general information than is usually attained by the most distinguished scholars of that University, and thus early laid the foundation for that literary distinction which adorned his future career in life. I well remember the remark of my friend, M. Leavenworth, Esq., a lawyer of reputation and a classical scholar, when speaking of Mr. Elliott, then a Senior in college, with whom he was intimately acquainted: 'Mr. Elliott was a young gentleman of more science and general information than any he ever knew of the same age and standing.'"

The following incident, related by Prof. Howe, exhibits the bent of his mind at that early age: "When he graduated his was the only English oration delivered by a Bachelor (there were two candidates for the Master's Degree). The subject was on 'The Supposed Degeneracy of Animated Nature in America.' As this was then a novel subject, having been but recently suggested by Buffon and Raynal, it was one of considerable interest to Americans, and excited much attention among the literati of our country, and I well recollect hearing Mr. Elliott's oration spoken of as an able refutation of the theory."

On his return home, after graduating at Yale with one of the

highest honors, he applied himself to agricultural pursuits. In 1796 he intermarried with Esther Habersham, daughter of Hon. James Habersham, of Georgia. About that time, or a few years previously, he was elected a Representative to the State Legislature from the Parish of St. Helena, and, with the intermission of a few years, he continued to serve, first in the House and afterwards in the Senate, until 1812. It was during the interval of his absence from the Legislature (between 1800 and 1808), that he devoted himself to the study of Botany, and commenced to prepare the material for a work, which, published many years afterwards, forms no inconsiderable part of his fame, and through which he is best known to the scientific world.

In 1808 he returned to the Senate, and at once took a leading part in the important business before that body. The "Free School" system of South Carolina, since modified, enlarged and improved, owes its origin to his sagacity, as a necessary correlative to the extension of the right of suffrage. That and the "Bank bill" were both his measures The latter was one creating the "Bank of the State," which was to be the financial agent of the State and under her control. On its enactment, he was unanimously chosen President, in which capacity he continued to serve, by annual re election, to the day of his death, thus justifying the confidence reposed in him by the Legislature.

This appointment caused his removal to Charleston, and opened the field for larger and more varied usefulness. It brought him more into contact with men of the highest culture, and with the institutions of learning. In a year after, he was elected President of the Charleston Library Society. On the death of Dr. Marcy, of the South Carolina College, he was elected President by the Trustees in that institution, to fill the vacancy. He accepted the office for a time, and then resigned, rather against the bent of his inclination and sympathies, but for personal reasons which do him honor. At the founding and organization of the Charleston Medical College, towards which he aided very materially, he had the gratification of being chosen Professor of Botany and Natural History. He was the first and, during his lifetime, the only President of the Philosophical Society of Charleston, which owed its origin mainly to his influence and exertions.

Not least among the literary labors of Mr. Elliott was that of his connection with the *Southern Review*, for a time its editor, as well as contributor to its columns. "The institution of the *Southern Review* may be regarded as an epoch in the scientific

and literary history of our State," says Dr. Moultrie, one of his cotemporaries, "and to Mr. Elliott is due the praise of having established it as such." The *Review* continued its honored career of usefulness for over thirty years afterwards, and only went down during the dark disasters of the war.

The versatility as well as the vigor of Mr. Elliott's mind may be seen in the variety of attainments in which he excelled. Beginning life as a legislator, in which capacity he served for many years, he took prominent and leading parts in many of the important measures of that time. As stated above, the "Free School" system of the State was one of his favorite measures. His advocacy of the Bank bill, and the ability displayed in elucidating financial matters, caused his election to the Presidency of the Bank of the State, which he retained by annual re-election to the day of his death. And it was while administering the affairs of the bank (a business, we may venture to believe, uncongenial to his tastes and to the development of his natural inclinations and abilities), that he found time for literary and scientific pursuits, which of themselves would have placed him in the foremost rank among men of letters.

To the readers of the GAZETTE, Mr. Elliott is chiefly known as a botanist. His "*Sketch of the Botany of South Carolina and Georgia*," as he modestly calls it, but which really was so nearly complete as to leave little to be added afterwards, was undertaken to supply a need which then existed for a more full and more accessible representation of the Southern flora. Though Southern plants had been collected and described by Michaux, Pursh and other casual visitors, there had been no special work devoted to the subject since the publication of Walter's *Flora Caroliniana*. That was only a beginning, and was necessarily imperfect, and it was written in Latin. Mr. Elliott added about 180[1] genera and over 1,000 species to Walter's contribution, and his "Sketch" continued to be the chief authority among Southern botanists for this latitude until the appearance of Chapman's *Flora of the Southern States*, in 1860. The first volume of the "Sketch," dedicated to Dr. Henry Muhlenberg, of Pennsylvania, was published in 1821; the second volume, dedicated to Dr. James Macbride, of South Carolina, in 1824. They were originally published in parts, and the interval between the volumes is thus explained.

[1] These figures are inserted on the authority of Dr. Moultrie. I have not a copy of Walter's Flora at hand to verify the statement.

The descriptions of species, worded in concise form, and embodying the prominent and distinguishing characters, are printed in Latin and English in parallel columns, with additional full English notes, in which are given the habitat, time of flowering, local names, and often the reputed medicinal properties, and other points of historical interest. These appended notes have often furnished the means of identifying his species. The whole work exhibits great care and scientific accuracy in its preparation. The arrangement is by the Linnæan system, the one mostly in use by the botanists of that day. The more natural classification of Jussieu was then rapidly gaining favor, and was altogether so much more satisfactory, that Mr. Elliott, before the conclusion of his volume, saw the necessity of remodeling his work, and makes allusion to it in the Preface to the second volume. With this design, he had in preparation a Prodromus founded on the Natural Orders of Jussieu, which he was to have annexed to the "Sketch." It was but half finished when death closed his earthly labors.

Dr. Moultrie, to whom I am indebted for many of the data contained in this paper, says of him: "Nor was it to Botany, Mineralogy and Geology, that his intelligent and spreading curiosity was confined. There was scarcely a department of Natural History which had not received a portion of his attention. No one was so well acquainted with the Ichthyology of South Carolina and Georgia. In early life he formed a collection of all the present known species, with a view to their description and publication, but the want of books and that inherent diffidence which made him mistrustful as to what others may have done before him, caused him to postpone the undertaking. He was not less interested in Conchology and the Natural History of Insects. In each of these departments he had made no inconsiderable progress. It is, perhaps, not generally known, that in addition to his various other attainments, he was a very good draftsman, and that to the pen of the Philosopher he also united that of the Poet. The testimonials of this latter gift are probably sufficient, as I have been informed, to form a volume, and fully equal to what might have been expected from the flowing harmony and melodious fullness of his prose writings."

Mr. Elliott's name is still held in honored remembrance by those of a later generation who only know him by his literary labors. The "Elliott Society," of Charleston, established in 1853, was a fitting tribute to the memory of one who had done so much for science.—H. W. RAVENEL.

Vitis palmata, Vahl.

Vitis palmata, Vahl, has been cultivated in the Paris Botanic Garden for one hundred years or more, and has thence found its way into other European gardens without, as it seems, attracting the attention of botanists. On the banks of rivers in Illinois, some eighty or ninety years ago, Michaux discovered this *Vitis*, which he, with the very scanty herbarium specimens before him, stowed away with his *Vitis riparia*, leaving, however, with it his original label: "*Vitis rubra, abonde sur les rivieres aux Illinois*," but never even mentioning the name in his Flora. When, twenty-six years ago, I studied Michaux's collections in the *Jardin des Plantes*, I was struck with the peculiarity of the specimens, especially with that which is preserved in the General Herbarium;[1] its seeds were so odd that I almost suspected a confusion. In this country it seems to have remained quite unknown; in Torrey and Gray's Flora it is suggested that it might be a form of *V. æstivalis*. Vahl's statement that it came from Virginia is, of course, erroneous, but not more so than many other American localities published in those, geographically, dark ages.

Mr. H. Eggert has had the good fortune to re-discover this species last fall, and collecting it again this summer, has furnished observations and specimens which permit me to complete the history of this long neglected plant.

VITIS PALMATA, Vahl. A vigorous climber with red branches (and often also red petioles), young shoots, angular and ribbed, older ones losing the bark in large flakes; diaphragms rather thick; stipules very short, rounded, early deciduous; leaves smooth, glabrous (or on the nerves beneath with short, straight hairs), dull and rather dusky green, cordate with a broad sinus, mostly deeply three- or sometimes five-lobed, lobes when long, widest in the middle, contracted at base and mostly slenderly caudate-acuminate, with few coarse teeth; flowering racemes compound, long peduncled; berries black without any bloom, rather small (four to five lines in diameter); seeds large for the size of the fruit, slightly notched on top, single, and then nearly

[1] I may also say that in hunting through Michaux's *Vitis*, I came across a well characterized specimen of *V. rupestris*, also preserved in that sheet of *V. riparia*. As Michaux never botanized west of the Mississippi, where *V. rupestris* is found from Missouri to Texas, it remained a question where he could have obtained that specimen, which had no label attached to it, until a few years ago Dr. Gattinger discovered the species on sand-bars in the Cumberland river near Nashville, a region well explored by Michaux.

globose, or in twos, when they are hemispherical and very flat on the ventral side; beak very short, chalaza narrow, elongated, groove without any visible rhaphe.

Michaux found it abundant on river banks in Illinois, but he may have confounded it with *V. riparia*, which is very abundant there. Mr. Eggert collected it in Missouri, on the Mississippi, in low bottom land, opposite Alton, not far above the mouth of the Missouri river, where it is found with *V. riparia*, flowering later than any other of our species here, in this very late season apparently not before the 15th or 20th of June; it matures in October, and the berries remain on the vine till November and later; their taste is sweet, without any disagreeable admixture. The plant, like *V. riparia*, grows readily from cuttings.

The species resembles *V. riparia* in the broad sinus of the leaves and the form of the seeds, but it is distinguished by the deep red color of the stems, which are angular when young, not terete, the thick diaphragms, the very small stipules, the dull, dusky color of the leaves and the form of their lobes, the bloomless berries, the large seeds and the late flowering period. With *V. cordifolia* it has very little in common, except the thick diaphragm and the bloomless berries. The absence of a prominent rhaphe on the seeds distinguishes it at once, and no other species could possibly be confounded with it.—G. ENGELMANN, *St. Louis, June 7, 1883.*

Notulæ Californicæ.

Saxifraga malvæfolia, Greene. Bull. Torr. Club. IX. 121. In addition to the single specimen on which the species was founded, two more have lately come to light in the herbarium of the California Academy; and this further information has been obtained. The plant was collected by Dr. Kellogg and Mr. Harford, in the autumn of 1876, on Santa Cruz Island, not Santa Rosa, as stated in the note accompanying the printed character. All three of the specimens now known show strongly the woody fibrous root (without any trace of bulb, or tuber), the leaves appearing simultaneously with the flowers, and the broad calyx, which are the characters by which the species is well distinguished from the closely allied *S. Parryi*, Torr , known only on the main land in the south part of the State.

Lythrum Hyssopifolia, L., not accredited to California, was collected by the present writer, at Calistoga, as long ago as 1874, and is observed to be very common near the shore of the bay at West Berkeley.

Pentachæta exilis, Gray. Bot. Cal. I. 305. I doubt if the rays in this species are ever of any color but white. What may pass for "sulphur color" in old specimens is, I think, the result of long keeping in the herbarium: such a change of color as usually happens to the white rays of Compositæ when the specimens are some years old. Everywhere, as seen growing, the rays are white, with usually a purple tinge on the under surface.

Pentachæta alsinoides, Greene. Bull. Torr. Club. IX. 109. Messrs. Kellogg and Harford collected abundant and excellent specimens of this most distinct species, at Mission Dolores, in the city of San Francisco, as long ago as 1868. I have sought vainly for any trace of ligules in their specimens, which are younger than those of my own gathering last year on the Berkeley hills. I find it, this year, at Vallejo, while Mrs. M. K. Curran brings in abundance from El Dorado county. Growing with it, in the district last named, Mrs. Curran finds what will have to be called

PENTACHÆTA APHANTOCHÆTA, namely, the *Aphantochæta exilis*, Gray. Pacif. R. Rep. IV. 100, referred, in Bot. Cal. I. 305, to *Pentachæta*, as variety of *P. exilis*, Gray. Its herbage, corollas, akenes, pappus, etc., all have characters by which the species is readily distinguished; and in the very copious specimens on hand there is no trace of any running together.

Grindelia hirsutula, Hook & Arn. Under this name two clearly distinct species are included. One is more slender, with short involucral scales, and smaller heads, which are nodding in the bud. The other is stout, holding its young heads rigidly erect, and having long, spreading involucral scales; but will any one be able to say which is the original *G. hirsutula?* The name is equally suited to both.

Grindelia cuneifolia, Nutt., is assuredly an excellent species, very readily distinguishable from *G. robusta*, Nutt., by its suffrutescent growth, and different time of flowering. It is three or four feet high, with a woody trunk, an inch or two in diameter, with a very dark, smooth bark. Its season of flowering is from October to the end of the year. *G. robusta* is always wholly herbaceous, and is done flowering by the end of August.

Both Dr. C. C. Parry and Mrs. Curran have this year brought in from the Antioch region good specimens of what Dr. Kellogg once described as *Stylocline acaule*, and which Dr. Gray, in Bot. Cal. II. 456, refers, as a form, to his own *Evax caulescens*. It appears to be so good a species of the genus last named that it even invalidates the subgenus *Hesperevax;* for it has strictly the

habit and the umbellate inflorescence of *Euevax*. The plant is of robust habit, but depressed, and nearly stemless, and the heads are borne in crowded umbels subtended by rosulately arranged foliage. The branches are stout, but short and horizontal. Although the specific name proposed by Dr. Kellogg, some years since, is neither strictly applicable, nor in the genus *Evax* very distinctive, yet I suppose it ought to be retained; and the specimens now collected will be distributed under the name EVAX ACAULIS, Greene.

The curious *Madia citriodora*, Greene, Torr. Bull. IX. 63, with akenes so strangely like those of a *Hemizonia*, hitherto known only from Yreka, in the extreme north of the State, is also now found by Mrs. Curran, not far from Sacramento. Her specimens are larger and more branching than the original ones, but have the same pleasant fragrance, with all the technical characters of the species.

Madia Yosemitana, Parry, I find in the herbarium of the California Academy, collected long ago by Dr. Eisen, near Fresno, and by Mr. Elisha Brooks, in the upper part of the Sacramento Valley, near Oroville. These specimens are all very much larger, with larger heads, and the flowers in them much more numerous than in the Yosemite plant.

It is not noted in the Bot. Cal. that two of the species of *Madia*—*M. Nuttalii* and *M. Bolanderi*—are perennials. That the last named species is so, I discovered but recently, and I now conclude that Mr. Pringle's Mt. Shasta plant, which was distributed as a new species, is only a variety of *M. Bolanderi*, differing from the type mainly by its shorter pappus. In Mr. Bolander's specimens I find occasionally a short pappus on a ray-akene.

It is nowhere noted in the books that the genera *Layia* and *Hemizonia* have different seasons of flowering, the former being vernal, the latter autumnal. There are, indeed, in the case of *Hemizonia* a few exceptions. *H. luzulæfolia*, DC will sometimes begin to flower in April, but it is in its best state in October. *H. Kelloggii*, Greene, is more strictly vernal, being in full glory during the month of May.

Asclepias incarnata, L. This species, which, so far as I can see, is not accredited to the Pacific slope of our continent, appears to have been collected in a swamp near San Jose, long ago, by Dr. Bolander. An excellent specimen, so ticketed, in the doctor's own handwriting, I find in the herbarium of the Academy.—E. L. GREENE.

GENERAL NOTES.

Note on Phallus togatus, Kalchb.—Probably most of the students of fungi of the United States were surprised at seeing, in the May number of the GAZETTE, a new name attached to the excellent plate of the *Phallus*, from Pennsylvania, collected by Mr. Rau. The species is certainly one long known to mycologists, although they have not been unanimous in deciding upon the name to be given it. The fungus is not rare near Boston, and I have seen it living on several occasions, once almost under the window of the dining-room of my boarding house in Cambridge. I have collected it in the so-called "egg" stage, that is, before the rupture of the peridium, and have watched its growth until the veil was fully expanded. The species has been referred by some writers to *P. indusiatus*, Vent., by others to *P. Dæmonum*, Rumph., and by others still to *P. duplicatus*, Bosc. The determination of the earlier described species of *Phallus* is notoriously difficult, because one has to trust almost entirely to figures which were drawn from poor and frequently pressed material, and, in several cases, it is more than probable that what was wanting in the material examined was supplied by the imagination of the artist.

The species figured in the GAZETTE certainly does not correspond to Ventenat's plate of *P. indusiatus* in the *Mem. de l' Inst. Vol. I., Pl. VII.*, where the veil reaches almost to the ground, is cylindrical and not campanulate in shape, and has much larger perforations. Nor does it seem to me that the species in question is the same as the form figured in the *Dict. d'Hist. Nat. Pl. VII., fig.* 1, as *P. indusiatus*, and later referred by Schlechtendal to his *P. tunicatus*. I think that the species is more properly *P. duplicatus*, Bosc, found by him in South Carolina, and described and figured in his "*Mémoire sur quelques espèces de Champignons des parties méridionales de l'Amérique septentrionale*" in the memoirs of the *Gesellschapt Naturforsch Freunde, Vol. V., p. 86, Pl. VI., f. 7*, published at Berlin in 1811. The plate of Bosc, although far from satisfactory, represents our plant in its essential features. The figure is larger than our plant, although I have seen specimens nearly as large, but the relative position and appearance of the pileus and veil are the same as in our species as usually seen. The figure given in the GAZETTE shows the veil fully expanded, and I have watched the fungus and seen it pass through all the stages from that figured by Bosc to that shown in the GAZETTE. The structure of the fully expanded veil in this species is cribrose rather than clathrate, and although it eventually becomes slightly campanulate and is a third as long as the stipe, or even somewhat longer, one usually finds the veil more or less wrinkled around the stipe. In short, I see no reason why we should not consider that the *Phallus togatus* of Kalchbrenner is the *P. duplicatus* of Bosc, as it corresponds more closely to that species, both in anatomical character and in its habitat than to any other, and, to state the case conversely, if this is not the species of Bosc, mycologists will find it next to impossible to tell what his *P. duplicatus* is.

If we accept this determination as correct, as far as it goes, the question remains whether *P. duplicatus*, Bosc, can not be merged in some previously de-

scribed species. The species, it hardly seems to me, can be referred to *P. indusiatus*, or any of the forms designated by different writers under that name. As I understand that species, the veil is always more delicate and with much larger perforations than in our *P. duplicatus*. Of the true *P. indusiatus* I have seen specimens from Cuba, and, although it is said to occur also in the United States, I have never been so fortunate as to find it. The name *P. indusiatus* occurs in my List of Fungi, near Boston, in *Bull. Bussey Inst., Vol. I., p. 433*, but, as was explained in a later number of the *Bulletin*, it was a slip of the pen, and the name intended was *duplicatus*. *P. Dæmonum* includes a number of forms of the Eastern hemisphere, and I have no material for forming an opinion of their relation to our fungus. *Phallus Brasiliensis*, Schl., whatever its relation to our plant may be, certainly can not replace the name *duplicatus* which has priority. In conclusion, then, it seems to me that *P. togatus*, Kalch., is nothing more than *P. duplicatus*, Bosc, which name must be retained unless some source of information, at present unknown to me, should show that the species is to be included in *P. indusiatus*.—W. G. FARLOW.

Chorisis in Podophyllum.—I found a curious specimen of *Podophyllum peltatum*, which, at the advice of Dr. Asa Gray, I will try to describe for the readers of the GAZETTE. It had a scape of about the size of the ordinary flowering plant, maintaining an almost equal thickness the entire length, the flower being borne sidewise at the tip, with no pedicel of its own. The inner row of petals showed an excellent gradation of *dédoublement*, from the entire petal, through one cleft in the middle, to a petal which was divided into two distinct parts. Of the twenty-one stamens, two were grown together, and on other plants I have occasionally found even three of them thus developed. Cases of *dédoublement* in the stamens are by no means rare with us.—AUG. F. FOERSTE, *Dayton, Ohio.*

Notelets.—I have a few field-notes to communicate. In the first place, I am much impressed this year by what may be called the excessive blooming of the maples; I certainly have never seen anything like the display made by *Acer saccharinum*, L., a week ago, and now by *A. pseudo-platanus*. In both cases I speak of trees in cultivation about our city streets. *A. dasycarpum*, Ehr., a frequent shade tree, is now in abundant fruit. I did not notice any unusual blooming in the species *A. rubrum* and *A. platanoides*. In the latter I have long found it extremely difficult to discover the pistillate flowers; the staminate are certainly much in excess. I know two trees of *A. rubrum*, L., standing side by side, that are strictly diœcious, and others that have a tendency in that direction. *A. saccharinum* came into flower here May 4th.

The alders, of which I noted the surprising lack of staminate catkins last year, have this season outdone themselves in their profusion of male flowers. They were a most beautiful sight. The date of blooming of some other plants may be of interest. April 11th, Viola odorata; 12th, Crocus vernus; 19th, Epigæa repens; 26th, Taraxacum Dens-leonis; 27th, Forsythia virdissima and Magnolia grandiflora; May 3d, Æsculus Hippocastanum in leaf, in flower the 21st; 5th, Oakesia sessilifolia; 9th, Amelanchier Canadensis; 13th, Menyan-

thes trifoliata, Betula alba, var. populifolia, Carpinus Americana, and Arisæma triphyllum; 19th, Saxifraga Pennsylvanica and Ranunculus abortivus; 21st, Geranium maculatum.

Last autumn I noted the remarkable second flowering of *Menyanthes;* in consequence of that effort, its flowers are rather scarce this spring.—W. W. BAILEY, *Brown University, May 23, 1883.*

Cundurango.—The plant received by the Botanic Garden of Harvard University from the Agricultural Department at Washington, about ten years ago, has this year blossomed, for the second time. It proves to be, without doubt, a *Macroscepis*, as Prof. Ernst (in *Trimen's Jour. Bot. 1872, 268*) rightly conjectured. It is not the original Humboldtian species, nor is it Fendler's No. 1051. It is said that there is more than one *Cundurango;* but it may be suspected that the plant which Triana, in *Bull. Soc. Bot. France*, XX. 34, has named *Gunolobus Cundurango*, and also *Marsdenia Reichenbachii*, is the same as ours It has very marked characters, especially in the very thick and fleshy lobes of the corolline corona; but I have not the means of knowing certainly whether it is a described species or not.—A. GRAY.

Notes on the Buckeye and Viburnum nudum.—While in the Ash, Beech, Ironwood and other young trees the root soon becomes woody, in the Buckeye it remains *fleshy* for quite a number of years. Specimens that by the rings of scars left by terminal bud scales indicated ages of six, seven and eight years, still had such soft roots that these could be cut with the thumb nail. The tap root is large (several times as thick as the stem of the plant), and spindle shaped, filled with a fleshy white pith, while the layers of wood and bark surrounding this are rather thin. The rootlets are provided with small, whitish, *tuberous* branches and tips.

Another interesting feature of this young Buckeye is that very frequently (I might almost say usually), the two or four buds above the cotyledon scars are *alternate;* above these the normal position again is resumed.

The *Viburnum nudum* ordinarily has opposite buds, though it is by no means a rare occurrence to find them in *whorls of three*, particularly on suckers or upright branches. This mode, however, is continued only by the *main axis*, and *in no case* have I observed that *branches* of such stems bear ternate buds; they always have the usual opposite ones. A sort of "missing link" was supplied by a stem that had at a number of nodes two branches, one-third of the circumference apart, while at the next node was a single branch directly above where the third would have completed the whorl.

In several instances all the buds were alternate, in some again they were irregular.

Cornus stolonifera shows the same departure from the regular mode of branching, but in this species the alternate arrangement is more common, while the ternate whorl is rare.—WILLIAM WERTHNER, *Dayton, O.*

Direct Observation of the Movement of Water in Plants.—In the *Am. Jour. Sci.*, Mch. '83, p. 237, Dr. G. L. Goodale calls attention to Vesque's direct observations of the absorption of water by plants. The method there given is

as follows: A stem with leaves attached is cut very obliquely (under water), then attached to a glass slide, the cut surface being covered by a thin glass cover or another slide. Some freshly-precipitated calcium oxalate is introduced into the water under the cover-glass when the current passing into the stem is made evident by the granules which are drawn to the mouths of the vessels, accumulating as little plugs at their openings and finally being sucked in. In some experiments to verify these observations, made by Mr. J. M. Waugh under my direction in the botanical laboratory of Purdue University, an improvement upon the method used by Vesque was made. The method as before given was successful, but only after repeated trials and with considerable difficulty in properly illuminating the upper cut surface so as to make the grains of the calcium salt visible. Thinking that other teachers may like to know just the way to make this easy demonstration a success I give the details of the experiment.

The stem of the common *Clematis* of cultivation was selected because of its relatively large vessels. This, after being cut obliquely with a razor, was attached to an ordinary slide by means of two rubber bands and covered with thin glass. The whole of this operation must be performed under water. The superfluous water was then wiped from the slide and it was transferred to the stage of the microscope. The stem must be illuminated from above, either by the mirror, if that swings above the stage, the Lieberkuhn, or the side condensing lens. The lenses best adapted for this observation are the $\frac{3}{4}$ or $\frac{2}{3}$ objective with the 2-in. eye-piece. Instead of the calcium oxalate, indigo rubbed into a thin paste with water was employed. The advantage of indigo over the white calcium oxalate lies in the fact that it is very dark, and hence the small grains can be easily seen. The process, as shown by these granules, is a very interesting one. Some collect at the edges of the larger vessels, and some pass directly into the cavity. The observations carried on by Mr. Waugh seem to show that the cross between the imbibition and cavity theories is nearer the truth than either. The granules stick against the edges of the cut wall because water is imbibed by it, and the others continue up the cavity of the vessel because of the current there. Suddenly pinching the stem sets the current backwards, and quickly removing the leaves stops it altogether.—C. R. B.

EDITORIAL NOTES.

THE SUBJECT of bacteria is beginning to receive the attention, at the hands of the medical fraternity, that its great importance merits. Two notable works have just appeared from the press of W. T. Keener, Chicago, on bacteria and their relation to disease, by Drs. Gradle and Belfield, of the Chicago Medical Colleges. Both works are carefully written, and will prove interesting reading to others than the class to whom they are specially addressed.

FUNGOUS PLANTS, as a source of food, are receiving increased attention in both this country and Europe. A monthly journal, specially devoted to them,

has recently appeared in Germany, under the name of *Zeitschrift für Pilzfreunde*, containing "popular articles on edible and noxious fungi." Each number has twenty-four octavo pages and a colored plate with several figures, which, considering the low price of the journal (four marks a year), are fairly executed. The third number contains an article on the preservation and preparation of mushrooms for the table, in which six methods are given for preserving, besides drying, and seven recipes for cooking. We can not forbear giving the names of the dishes as an indication of the delicacies allowed to go to waste in our fields: Champignon-fricassée, mushroom sauce, mushroom soup, stuffed mushrooms, champignons à la provençale, champignons à la Cussy, and mushroom ketchup.

THE LIST OF PLANTS from which liquid water exudes is becoming quite large. Volkens describes the water-pores of 150 species, distributed through 91 genera and 36 families.

CHAREYRE, in *Comptes Rendus*, traces a connection between cystoliths and the hairs over them. He states that calcification begins in the hair, and in most cases goes on to form a calcareous mass in the epidermis below, which mass is the cystolith. Dr. Goodale, in *Science*, suggests that it is an interesting fact in this connection that cystoliths occur in leaves of plants which are perfectly smooth. We would also suggest, as equally interesting, that in *Pilea* splendid cystoliths occur, which are not in the epidermis at all, but several layers of cells below.

MR. W. W. CALKINS, of Chicago, has a splendid collection of Florida woods, containing 184 species of the 208 credited to that State. Each specimen is 5 to 10 inches in diameter, and 10 to 12 inches long. A list of the species has been published.

MR. GEORGE E. DAVENPORT'S check list of N. Am. Ferns has just been received, and should be in the hands of all botanists for convenience in cataloguing and exchanging. The moderate price of 25 cents a dozen places them within the reach of every one. The supplement to the catalogue of the Davenport Herbarium is also in hand, and adds 26 species, one being new. Mr. Davenport can be addressed at Medford, Mass.

DR. H. F. HANCE has just described a new *Podophyllum*, from Formosa, in the *Journal of Botany*. Heretofore the genus contained but the two species, our own *P. peltatum* and the Himalayan *P. Emodi*, but recently discovered in the Tangut country by Przewalsky, and both these species have solitary white flowers, differing chiefly in the fact that our species has twice as many stamens as petals, while the Himalayan form has stamens and petals equal in number. This new Chinese *Podophyllum* (*P. pleianthum*) has much larger isostemonous flowers of a dull red color, arranged in a pendulous group of five or six in the fork of the two stem-leaves; they are bractless and exhale a strong odor of putrefying flesh. This discovery is what might have been expected since the discovery of *Diphylleia* and *Caulophyllum* in Japan and Sachalin, and of *Jeffersonia* in Manchuria.

MR. A. B. MORGAN has published a second part of his "Mycologic Flora of the Miami Valley, O.," bringing up the genus *Agaricus* to 146 species.

SCIENCE still continues to give botany as much attention as at first, in the form of independent articles, book reviews, communications, and a weekly summary. Dr. W. G. Farlow looks after the latest information regarding cryptogams; the other writers were mentioned in our notice in the March GAZETTE.

ACTINOMYKOSIS is the name of a new disease in man and the lower animals caused by a fungus of the genus *Actinomyces*, which forms tumors near the angle of the jaw and proves fatal when it becomes generalized. It was the subject of remarks by Dr. Thomas Taylor and Dr. D. E. Salmon, at the meeting of the Biological Society of Washington, on the 25th of last month.

IN THE FOURTH volume of the "Monographiæ Phanerogamarum," just published, Dr. Engler monographs *Burseraceæ* and *Anacardiaceæ* and Count Solms-Laubach *Pontederiaceæ*. Two new genera of *Anacardiaceæ* are proposed, *Pleiogynium* on *Spondias acida*, Soland, and *Pseudospondias* on *Spondias microcarpa*, Rich.

A PRIZE of 500 francs has been offered by the *Société de physique et d'histoire naturelle de Genève* for the best monograph of a genus or family of plants. The prize was founded by the elder DeCandolle. The manuscripts are to be sent to Prof. Alph. DeCandolle, at Geneva, before October 1, 1884, and the members of the Society are not admitted to the contest.

THE PROCEEDINGS of the Society for the Promotion of Agricultural Science, just published, contains quite a number of articles on applied botany.

PROF. C. E. BESSEY has a pleasant article in the Transactions of the Iowa Horticultural Society, for 1882, entitled On Parasitic and Other Fungi, in which he points out the popular danger of entertaining extreme views of the harmfulness of these plants, not properly discriminating between good and bad.

AN ALPHABETICAL INDEX to the first ten centuries of Ellis' North American Fungi has been issued. It was compiled by W. C. Stevenson, jr., and is most carefully and satisfactorily done.

THE REPORT of the State Laboratory of Natural History of Illinois, which was lately issued, shows that that State is fully alive to the great need of an investigation of the parasitic fungi. During the collecting season of last year and the latter half of the preceding year, Prof. A. B. Seymour has been enabled to give his whole time to collecting throughout the State, with assistants to take care of the material as it arrived at the laboratory. A working library, herbarium, and instruments have been secured, and it is now proposed to work up this material along with future accessions into reports that will be of permanent value to the citizens of the State. It is an enterprise in the right direction, and deserving emulation.

DR. J. J. BROWN, of Sheboygan, Wis., has for several seasons experimented with field fungi for culinary purposes. He finds no fungi that one would be likely to gather for eating that are violently poisonous. His method for dis-

covering the valuable kinds is one that requires no scientific knowledge of the plants, and commends itself for its practical common sense. He gathers fresh, clean-looking specimens. If they have a bad or unpleasant odor when cooking they are discarded; and one will soon be able to tell the good from the bad at this time with considerable certainty. A small amount of the cooked fungus is then eaten; if it has a pleasant taste and no disagreeable results follow, it is partaken of more freely next time, and is soon put on the list of valuable kinds. Tasting of the fresh fungus is but little assistance, as an acrid or nauseating property is often dispelled in the preparation. There is no doubt that the danger of fungus-poisoning has been unnecessarily exaggerated. With the caution just pointed out the danger is so greatly lessened that it is practically reduced to zero, and no one need hesitate to make use of this abundant supply of nourishing and palatable food. It may be added that many sorts will be found harmless enough, but of no more culinary value than so much grass or wood, being either not juicy or without a rich flavor.

ON THE FIRST PAGE of the sketch of Dr. William Baldwin, published in our last number, at the end of the seventh line, for "Josiah," read "Joshua."

CURRENT LITERATURE.

A Revision of the genus Fraxinus, by TH. WENZIG, in Engler's *Botanische Jahrbuch*, iv. p. 164–188 (1883), is evidently the result of much pains-taking, and quite free from all tendency to undue multiplication of the species. In the American species he generally follows, and much commends, the Synoptical Flora of North America; making, however, certain changes, the propriety of which is to be questioned.

F. GREGGII, Gray, is given as a synonym of *F. Schiedeana*, Cham. & Schlecht. (which was Dr. Torrey's original suggestion), upon the evidence of the description. Wenzig has only Schiede's plant; we have only Gregg's and Bigelow's. So the case is not yet settled. A collection of our specimens with Wenzig's description of *F. Schiedeana* leads to a belief that the two are not identical, but we hope to have them directly compared.

Coming now to the American *Fraxinasters*, Dr. Wenzig makes the two subsections, *Epipteræ* and *Peripteræ*, which we have insisted on, though without giving them names. But to our surprise he refers our *F. viridis* to the latter, thus separating it widely from *F. pubescens*, the samaræ of which are just the same. He does not figure the fruit of our *F. viridis*, which he has from "Brendel and Rühl" (Riehl?), surely either the wrong thing, or in abnormal form. Taking his species in order we have:

F. AMERICANA, L. To this is referred *F. juglandifolia* of Willd., as well as of Lam., doubtless on authority of the herbarium, and as the character by Willdenow looks that way, we may conclude that the reference of his plant in the Synoptical Flora to *F. viridis* is a mistake. The reference of the original of this latter name we will discuss in another connection. *F. epiptera* of Michaux is of course referred here.

Var. MICROCARPA and var. TEXENSIS, Gray, are simply adopted.

Var. UHDEI and var. OVALIFOLIA, are from Mexico, coll. Uhde, and are unknown to us.

Var. PISTACIÆFOLIA is founded on *F. pistaciæfolia*, Torr., and we are unable to draw distinct limits between its forms and those of *F. Americana*.

Var. CORIACEA is *F. pistaciifolia*, var. *coriacea*, Gray. This is certainly going too far altogether. No doubt there is a distinct species, for which the name of *F. velutina*, Torr., is the oldest, and that of *F. coriacea*, Watson, the more appropriate.

F. PUBESCENS, Lam., well described, and it appears that *F. expansa*, Willd. Berl. Baum. (1811) belongs to it. But Wenzig adds:

Var. BERLANDIERIANA, on *F. Berlandieriana*, DC. And in a foot note: "*F. Berlandieriana* DC. samaris apteris est *Fr. pubescentis* Lam. varietas, non *Fr. viridis* var. ut cl. Gray vult." This without seeing Berlandier's specimens. We have before us, from the latter's herbarium, counterparts of the specimens sent to Geneva. The form from Austin, with foliage only, has a developing leaf, which is perfectly glabrous, as are the adult leaves and branchlets. The fruit bearing specimens, from the Nueces, are equally glabrous, with traces of the barbellation along the midrib, especially in the axils of the veins, which is common in our *F. viridis*, of which we take it to be a mere variety. Wenzig has Mexican specimens of Schaffner's collection, as we have also, but not under the same number. These Ashes from San Luis Potosi, also Monterey, are rather peculiar, but we judge are of this species.

Var. LINDHEIMERI, on Lindheimer's No. 653, 1847. We have it also, coll. 1848, with forming fruit. Clearly same as the above.

F. VIRIDIS, A. Gray. This, as just stated, is placed in the "Pterocarpæ" division, next to *F. platycarpa*, where it does not at all belong. *F. viridis*, Michx. f. is referred as synonym to *F. Americana*, on the strength of Michaux's citation of *F. juglandifolia*, Lam., and on his description and figure of the fruit. And it seems from another note, that Koch found an original specimen in herb. Jussieu, which was *F. platycarpa*, and also in other herbaria both *F. Americana* and *F. pubescens* under this name. To all which it is to be said: first, that the foliage of Michaux's plate can not belong to *F. platycarpa*, which grows only south of the range in which Michaux observed his Green Ash, while the figure of the fruit is widely different. Michaux's description of the tree and its foliage exactly applies to the Green Ash. He says it is Muhlenberg's *F. concolor*, and he saw it at the latter's stations on the Susquehanna. He should have adopted this name, and we should have been justified in doing so, perhaps, though only a catalogue name. The perplexities of the case we long ago cleared up, as we still believe, by the hypothesis that in Michaux's Sylva, the fruit of *F. Americana* and *F. viridis* are mismatched on the plate, and consequently the author described the fruit of the Green Ash from the plate or from the specimens figured on the plate.

So, unless we fall back on the excellent name of *F. concolor*, Muhl., we must still, for the Green Ash, write *F. viridis*, Michx. f. (in part), Gray, Man., etc. Yet we may be driven to another alternative, and do with the whole of the Green Ash what Wenzig has done with a part of it, that is, reduce it to a variety of *F. pubescens*. Undoubtedly the two appear to run together.

Of the true *Pterocarpæ*, viz. F. PLATYCARPA, F. QUADRANGULATA, F. ANOMALA, and F. OREGONA, there is nothing here to remark. ASA GRAY.

A Revision of the genus Clematis of the United States, by Joseph F. James. From the Jour. Cin. Soc. Nat. Hist. 6, July, 1883.

This is a paper read by title before the American Association of 1882. The author has "collected the descriptions of all the species of the United States," and has given their geographical range and synonymy. Of course there will always be a difference of opinion as to whether certain forms should rank as species or varieties. For instance, *C Scottii*, Porter, is probably only a form of *C. Douglasii* with broader leaflets; while the author will hardly be followed in reducing *C. Fremontii*, Watson, to a variety of *C. ochroleuca*, Ait., and the same might be said by some of *C. coccinea*, Engelm, and *C. Pitcheri*, T. & G., as varieties of *C. Viorna*. It is hardly correct to say that "the genus *Clematis*

forms the tribe *Clematidæ* of *Ranunculaceæ*," as there is associated with it a small genus of Southern Asia, *Naravelia* by name. The geographical range is given quite fully, and is evidently the result of much care and correspondence.

Descriptions of Iowa Uromyces, by J. C. Arthur. From Bulletin Minn. Acad. Nat. Sci., Vol. II.

Some Algæ of Minnesota supposed to be Poisonous, by the same. l. c. The former paper is the result of a careful study of a portion of the American *Uredineæ*, to which group the author has lately been paying special attention. The effort is most commendable to attract attention to plants too much neglected, and if ever the study of the lower Cryptogams ceases to be a bugbear, it will largely be due to just such workers as Prof. Arthur. The novel part about the present paper is that it attempts to group under each species all the three stages in its life history. Of course this is the thing to do, and it has only been because of our ignorance of the true relationship among these scattered phases, that it has not long since been done. A careful set of cultures is what is needed to unravel the snarl. In the meantime it has been customary to base species upon the characters of one or two phases, and to distribute the phases under separate genera, and Prof. Arthur shows considerable boldness in cutting loose from the old models, and attempting a natural grouping. The species number 12, one being new.

The second paper describes the discovery of some *Nostoc*, probably *Rivularia*, in certain Minnesota lakes, which was supposed to have caused the death of many cattle drinking their waters. These same "bur-balls" were found by the writer in great abundance in one of the small, swampy lakes along the Kankakee river in Jasper county, Ind. A large drove of cattle were drinking from it, but no ill-effects were heard of, although camping in the vicinity for a week gave abundant opportunity. These Algæ have already been noticed by Dr. Farlow in the May GAZETTE.

Lectures delivered to the Employes of the Baltimore and Ohio Railroad Company, by Drs. H. Newell Martin, H. Sewall, W. T. Sedgwick, and W. K. Brooks, of the Johns Hopkins University. Baltimore, 1882. 8°, 98 pp. Illust.

The marked success attending the delivery and distribution of these four lectures should prove an incentive to like undertakings elsewhere. The third lecture, on fermentation, by Dr. Sedgwick, is the only botanical one of the series. Botany has many topics of equal interest to a general audience, and ways might more frequently be devised to give those whose employment does not permit of much reading, and of no investigation, some insight into the more wonderful of the recent advances of science.

North American Fungi, by J. B. Ellis. Centuries X and XI. Newfield, 1883.

The continuance of this publication is a gratifying indication of the growing interest in this department of our science. Too great praise can not be bestowed upon the neatness and care, as well as the scientific accuracy with which the volumes are prepared, qualities which make the work indispensable to the investigator. In Century X the genera *Agaricus*, *Marasmius*, *Polyporus*, *Hydnum*, *Melanconium*, and *Peziza* are represented by from five to nine species each, while most of the other genera of the volume have but one representative. Century XI is composed of *Uredineæ*, excepting the last eleven examples, which belong to the *Ustilagineæ*. The determination and synonymy of this volume has been largely the work of Dr. W. G. Farlow, of Harvard University. The principal genera are *Puccinia* with thirty-six examples, *Æcidium* with twenty, *Ustilago* with nine, and *Peridermium*, *Uromyces* and *Ræstelia* with six each. Some new species and changes of synonomy may be passed over for the present, as critical notes by Dr. Farlow will soon appear in the proceedings of the American Academy.

Catalogue of Publications of the Smithsonian Institution, with an Alphabetical Index of Articles, by W. J. Rhees. Washington, 1882. 8°. XIV, 328 pp.

This volume will prove very serviceable to all who desire information from or about the publications issued under the authority of the Institution. The classified list of separate works contains twenty entries under botany, while the general index has a large number of references to scattered articles.

Bentham and Hooker's Genera Plantarum, Vol. III, *Part 2*. This part contains the thirty-four orders of Monocotyledons, and completes one of the greatest botanical works of the century. No botanical library can afford to be without it any more than it can dispense with DeCandolle's Prodromus, and now the complete generic arrangement of a general herbarium becomes possible. Singularly enough the orders of Phanerogams number exactly 200. The Monocotyledons are divided into seven series, as follows, the orders mentioned being only those of our own flora:

Series I, characterized by its petaloid perianth, inferior ovary, and very small exalbuminous seeds, is called *Microspermæ*, and includes Hydrocharideæ, Burmanniaceæ, and Orchidaceæ.

Series II, differing from the former in its copious albumen, is named *Epigynæ*, and contains Bromeliaceæ, Hæmodoraceæ, Irideæ, Amaryllideæ, and Dioscoraceæ.

Series III differs from the last in its free ovary, and is called *Coronariæ*, containing Liliaceæ, Pontederiaceæ, Xyrideæ, and Commelinaceæ.

Series IV differs from the last in its small rigid calyx-like perianth, and is named *Calycinæ*, including Juncaceæ and Palmæ.

Series V has the perianth reduced to setæ or wanting, and is called *Nudifloræ*, including Typhaceæ, Aroideæ, and Lemnaceæ.

Series VI has distinct carpels and exalbuminous seeds, and is called *Apocarpæ*, containing Alismaceæ and Naiadaceæ.

Series VII has flowers in heads or spikes and the parts glumaceous, of course called *Glumaceæ*, and containing Eriocauleæ, Cyperaceæ, and Gramineæ. Thus our flora contains 22 of the 34 orders. We can only make a few notes at random of the more striking changes.

Smilaceæ is made to rank only as a tribe under *Liliaceæ*. The genus *Anacharis* becomes *Elodea*. The family of Orchids seems to number the most species, containing nearly 5,000 species under 334 genera, the two largest genera being *Habenaria* and *Epidendrum*, each with 400 species. *Cyperaceæ* and *Gramineæ* come next in point of numbers, with *Liliaceæ* as fourth with 2,100 species and 187 genera, *Allium* being the largest with 250 species. Watson's *Oakesia* is returned to *Uvularia*. In the family of *Palmæ* there are about 1,100 species and 132 genera. It was with very great pleasure that we noted the dedication of a genus of palms to our good friend Mr. Sereno Watson, as distinguished among botanists as he is amiable among men. The genus is founded upon what is called *Sabal serrulata* in Chapman's Flora, and is called *Serenæa*, as the name *Watsonia* was already in use for an African genus of the *Irideæ*. *Spirodela* has again been remanded to *Lemna*. Our authors are very strongly impressed with the idea that there are far too many species of *Cyperaceæ* and *Gramineæ*, giving it as their opinion that while among *Cyperaceæ* 3,000 species are described, scarcely 2,200 should be retained. *Cyperus* and *Carex* are the two largest genera of this family, the former containing 700 species, the latter 800, which Bentham and Hooker say should be reduced to 500. *Eleocharis* has become *Heleocharis*. Mr. Bentham's changes among the *Gramineæ* have already been pretty fully noted in advance in this journal, and with even greater particularity in the *Torrey Bulletin* for November, 1882. We must certainly give expression to the general sentiment among botanists when we say, that these most distinguished authors have placed the botanical world under an obligation which can hardly be expressed, much less repaid.

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MEEHAN, THOS.—Observations on the variability of Quercus robur and remarks by A. De Candolle; reviewed by Peter, *Bot. Zeit.* April 27.
NORDSTEDT, O.—Review of his "Fragments of a monograph of the Characeæ, by A. Braun," *Hedw.* Feb.
OUDEMANS, C. & J. A.—Two new fungi, *Hedw.* April.
PARRY, C C.—Cucurbita Californica, Torr. (completing the character, with plate), *Torr. Bull.* 10.50.
PAX, FERD.—Flora of the Rehhorn near Schatzlar, *Flora*, April 21.
PENZIG, O.—Review of his "Fungi Agrumicoli," with descriptions of new species, *Hedw.* March and April.
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